

### REMARKS

Claims 1-42 and 44-52 are pending in the present application. By this Amendment, previously presented claims 1, 10-12, 17-18, 24, 28, 36, 38-39, 41-42, 44-46 and 48 have been amended. Applicants respectfully request reconsideration of the present claims in view of the foregoing amendment and the following remarks.

#### I. Prior Art Rejections:

##### Claim Rejections Under 35 U.S.C. §103(a):

##### Rejection of Claims 1-2, 4, 6-9, 15-27, 34-49 and 51-52 Under 35 U.S.C. §103(a) In View Of Kubota In Combination With Krepski'160

Previously presented claims 1-2, 4, 6-9, 15-27, 34-49 and 51-52 were rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 5,846,306 to Kubota et al. (hereinafter, "Kubota") in view of U.S. Patent No. 5,929,160 to Krepski et al. (hereinafter, "Krepski'160"). This rejection is respectfully traversed for at least the reasons given in Applicants' November 21, 2003 Amendment and Response.

As discussed in Applicants' November 21, 2003 Amendment and Response, the teaching of Kubota fails to teach or suggest at least the following claim features recited in independent claims 1, 24, 36 and 42:

- (1) an ink jet ink containing dispersed particles of a silyl-terminated sulfopoly(ester-urethane) as recited in claim 1;
- (2) a method of imaging a substrate comprising ink jet printing an ink composition onto the substrate, wherein the ink composition contains silyl-terminated sulfopoly(ester-urethane) having a structural formula as recited in claim 24;
- (3) an ink jet ink containing at least 20 weight percent dispersed shear deformable polymer particles wherein the polymer is self-crosslinking as recited in claim 36; and
- (4) a method of imaging a substrate comprising ink jet printing an ink composition onto the substrate, wherein the ink composition contains at least 20 weight percent dispersed shear deformable particles, wherein the polymer is self-crosslinking as recited in claim 42.

Further, as discussed in Applicants' November 21, 2003 Amendment and Response, the teaching of Krepski'160 is directed to methods for making silyl-terminated sulfopoly(ester-urethanes). However, the teaching of Krepski'160 fails to teach or suggest the use of silyl-terminated sulfopoly(ester-urethanes) in ink compositions, and especially ink jet printable ink compositions. The teaching of Krepski'160 is primarily concerned with the use of silyl-terminated sulfopoly(ester-urethanes) in pavement marking compositions.

Examiner Shosho acknowledges that the teaching of Kubota fails to teach or suggest Applicants' claimed invention as embodied in independent claims 1, 24, 36 and 42. (See, page 8, lines 11-13 of the August 21, 2003 Office Action, and page 4, lines 11-15 of the February 20, 2004 Office Action.) Examiner Shosho further acknowledges that the teaching of Krepski'160 fails to disclose the use of silyl-terminated sulfopoly(ester-urethane) polymeric particles in ink jet ink compositions. (See page 3, line 13 of the February 20, 2004 Office Action.) However, Examiner Shosho concludes that the present invention would have been obvious over the combined teaching of Kubota and Krepski'160.

Applicants disagree for at least the reasons given in Applicants' November 21, 2003 Amendment and Response.

As discussed in Applicants' November 21, 2003 Amendment and Response, one of ordinary skill in the art, given the teaching of Kubota directed to ink jet printable inks, would not have sought out the teaching of Krepski'160, which is not directed to inks or ink jet printable inks. There is no disclosure or suggestion in the teaching of Kubota that would have lead one skilled in the art to the teaching of Krepski'160 and the specific silyl-terminated sulfopoly(ester-urethane) polymeric particles disclosed therein.

Examiner Shosho suggests that one of ordinary skill in the art given the teaching of Kubota would have been motivated to seek out the teaching of Krepski'160, which is not directed to inks or ink jet printable inks, in order to improve the toughness, weatherability, abrasion resistance, and/or enhanced adhesion of the ink jet printable inks of Kubota. However, as noted in Applicants' November 21, 2003 Amendment and Response, the teaching of Kubota discloses the incorporation of specific thermoplastic resin emulsions to provide improved water resistance and rubbing resistance (see, column 7, lines 9-47). Applicants respectfully submit that

one of ordinary skill in the art seeking to improve the toughness, weatherability, abrasion resistance, and/or enhanced adhesion of the ink jet printable inks of Kubota would rely on the disclosure of Kubota, which addresses these concerns with specific thermoplastic resin emulsion systems, and not seek out the teaching of Krepski'160 as suggested.

On page 4, lines 1-5 of the February 20, 2004 Office Action, Examiner Shosho specifically states:

Further, while there is no disclosure in Krepski et al. '160 of ink jet inks, Krepski et al. '160 do disclose using silyl-terminated sulfopoly(ester-urethane) polymers in aqueous compositions comprising pigment, dispersant, defoamer, wetting agents, etc. (col. 15, line 54-col. 16, line 17) which is very similar, if not identical, to ingredients found in ink jet inks.

Applicants disagree.

As noted above, Krepski'160 discloses the use of silyl-terminated sulfopoly(ester-urethanes) in pavement marking compositions, which are aqueous compositions that are not ink jettable due to the presence of the above-mentioned materials, namely, pigments such as titanium dioxide and fillers such as calcium carbonate. See, Krepski'160 beginning at column 15, line 10. Even though the teaching of Krepski'160 discloses aqueous compositions containing a variety of components, such as a pigment or dispersant, the teaching of Krepski'160 still fails to teach or suggest an ink jettable ink containing silyl-terminated sulfopoly(ester-urethanes) particles.

Further, as discussed in Applicants' November 21, 2003 Amendment and Response, Applicants respectfully submit that the only motivation for the proposed modification of the teaching of Kubota (i.e., incorporating silyl-terminated sulfopoly(ester-urethanes) particles into the disclosed ink jet inks) has been gleaned from a review of Applicants' invention, not from what is being taught or suggested in the art. There simply is no suggestion in the art of record to incorporate silyl-terminated sulfopoly(ester-urethanes) particles into an ink jet ink.

Applicants of the present invention were the first to attempt to incorporate silyl-terminated sulfopoly(ester-urethanes) particles into an ink jet ink. Further, Applicants of the present invention were the first to discover the benefits of incorporating (and the ability to

incorporate) silyl-terminated sulfopoly(ester-urethanes) particles into an ink jet ink. The art of record fails to teach or suggest such an advancement in the art of ink jet inks.

For at least the reasons given above, Applicants respectfully submit that a *prima facie* case of obviousness has not been made, and that the combination of the teaching of Kubota with the teaching of Krepski'160 fails to make obvious Applicants' claimed invention as embodied in independent claims 1, 24, 36 and 42. Since claims 2, 4, 6-9, 15-23, 25-27, 34-35, 37-41, 43-49 and 51-52 depend from independent claims 1, 24, 36 and 42, and recite additional claim features, Applicants respectfully submit that the combination of the teaching of Kubota with the teaching of Krepski'160 also fails to make obvious claims 2, 4, 6-9, 15-23, 25-27, 34-35, 37-41, 43-49 and 51-52. Accordingly, Applicants respectfully request withdrawal of this rejection.

Rejection of Claims 1-5, 9-16, 23-25, 27, 31, 34-39, 42-50 and 52 Under 35 U.S.C. §103(a) In View Of Zhu In Combination With Krepski'160

Previously presented claims 1-5, 9-16, 23-25, 27, 31, 34-39, 42-50 and 52 were rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 5,889,083 to Zhu (hereinafter, "Zhu") in view of Krepski'160. This rejection is respectfully traversed for at least the reasons given in Applicants' November 21, 2003 Amendment and Response.

As discussed in Applicants' November 21, 2003 Amendment and Response, the teaching of Zhu is directed to ink jet printable ink compositions, which provide scratch and rub resistance to a printed image. The disclosed ink jet printable ink compositions contain specific binder resins, similar to those disclosed in the teaching of Kubota, and waxes in order to provide toughness, abrasion resistance, adhesion, and color fixing properties to the printed image (see, column 4, lines 47-54; column 6, lines 31-42; and column 8, lines 21-25).

Like the teaching of Kubota, the teaching of Zhu fails to teach or suggest the following features recited in independent claims 1, 24, 36 and 42:

- (1) an ink jet ink containing dispersed particles of a silyl-terminated sulfopoly(ester-urethane) as recited in claim 1;

(2) a method of imaging a substrate comprising ink jet printing an ink composition onto the substrate, wherein the ink composition contains silyl-terminated sulfopoly(ester-urethane) having a structural formula as recited in claim 24;

(3) an ink jet ink containing at least 20 weight percent dispersed shear deformable polymer particles wherein the polymer is self-crosslinking as recited in claim 36; and

(4) a method of imaging a substrate comprising ink jet printing an ink composition onto the substrate, wherein the ink composition contains at least 20 weight percent dispersed shear deformable particles, wherein the polymer is self-crosslinking as recited in claim 42.

The Office Action acknowledges that the teaching of Zhu fails to teach or suggest ink jet printable ink compositions containing silyl-terminated sulfopoly(ester-urethane) particles (see, page 10, lines 9-10 of the August 21, 2003 Office Action, and page 4, lines 11-15 of the February 20, 2004 Office Action), and relies on the teaching of Krepski'160 to allegedly cure the above-noted deficiencies in the teaching of Zhu using a similar analysis as described above with regard to the rejection of claims 1-2, 4, 6-9, 15-27, 34-49 and 51-52 in view of the combined teachings of Kubota and Krepski'160.

For similar reasons as discussed above and in Applicants' November 21, 2003 Amendment and Response, Applicants respectfully submit:

(1) that one of ordinary skill in the art, given the teaching of Zhu directed to ink jet inks, would not have sought out the teaching of Krepski'160, which is not directed to inks or ink jet inks;

(2) that there is no disclosure or suggestion in the teaching of Zhu that would have lead one skilled in the art to the teaching of Krepski'160 and the specific silyl-terminated sulfopoly(ester-urethane) polymeric particles disclosed therein;

(3) that the teaching of Zhu discloses the incorporation of specific binder resins and waxes to provide improved toughness, abrasion resistance, adhesion, and color fixing properties to a printed image, so one of ordinary skill in the art seeking to improve the toughness, weatherability, abrasion resistance, and/or enhanced adhesion of the ink jet inks of Zhu would rely on the disclosure of Zhu, which addresses these concerns with specific binder resins and waxes, and not seek out the teaching of Krepski'160 as suggested; and

(4) that the only motivation for such a modification of the teaching of Zhu has been gleaned from a review of Applicants' invention, not from what is being taught or suggested in the art.

For at least the reasons given above, Applicants respectfully submit that a *prima facie* case of obviousness has not been made, and that the combination of the teaching of Zhu with the teaching of Krepski'160 fails to make obvious Applicants' claimed invention as embodied in independent claims 1, 24, 36 and 42. Since claims 2-5, 9-16, 23, 25, 27, 31, 34-35, 37-39, 43-50 and 52 depend from independent claims 1, 24, 36 and 42, and recite additional claim features, Applicants respectfully submit that the combination of the teaching of Zhu with the teaching of Krepski'160 also fails to make obvious claims 2-5, 9-16, 23, 25, 27, 31, 34-35, 37-39, 43-50 and 52. Accordingly, Applicants respectfully request withdrawal of this rejection.

Rejection of Claims 1-2, 4-9, 15-16, 23-25, 27-30, 32-37, 40, 42-49 and 51-52  
Under 35 U.S.C. §103(a) In View Of Erdtmann In Combination With Krepski'160

Previously presented claims 1-2, 4-9, 15-16, 23-25, 27-30, 32-37, 40, 42-49 and 51-52 were rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 6,533,408 to Erdtmann et al. (hereinafter, "Erdtmann") in view of Krepski'160. This rejection is respectfully traversed for at least the reasons given in Applicants' November 21, 2003 Amendment and Response.

As discussed in Applicants' November 21, 2003 Amendment and Response, the teaching of Erdtmann is directed to ink jet printable ink compositions and ink-receiving substrates, such as paper and resin-coated paper. The disclosed ink jet printable ink compositions contain specific water-dispersible polymers in order to provide wet and dry abrasion resistance, and ozonefastness to the printed image (see, column 6, line 8 to column 9, line 6; Example 1; column 14, lines 34-67; and Tables 3-5).

As discussed in Applicants' November 21, 2003 Amendment and Response, the teaching of Erdtmann fails to teach or suggest the following features recited in independent claims 1, 24, 36 and 42:

(1) an ink jet ink containing dispersed particles of a silyl-terminated sulfopoly(ester-urethane) as recited in claim 1;

(2) a method of imaging a substrate comprising ink jet printing an ink composition onto the substrate, wherein the ink composition contains silyl-terminated sulfopoly(ester-urethane) having a structural formula as recited in claim 24;

(3) an ink jet ink containing at least 20 weight percent dispersed shear deformable polymer particles wherein the polymer is self-crosslinking as recited in claim 36; and

(4) a method of imaging a substrate comprising ink jet printing an ink composition onto the substrate, wherein the ink composition contains at least 20 weight percent dispersed shear deformable particles, wherein the polymer is self-crosslinking as recited in claim 42.

The Office Action acknowledges that the teaching of Erdtmann fails to teach or suggest ink jet ink compositions containing silyl-terminated sulfopoly(ester-urethane) particles (see, page 11, lines 18-19 of the August 21, 2003 Office Action, and page 4, lines 11-15 of the February 20, 2004 Office Action), and relies on the teaching of Krepski'160 to allegedly cure the above-noted deficiencies in the teaching of Erdtmann using a similar analysis as described above with regard to (i) the rejection of claims 1-2, 4, 6-9, 15-27, 34-49 and 51-52 in view of the combined teachings of Kubota and Krepski'160 and (ii) the rejection of claims 1-5, 9-16, 23-25, 27, 31, 34-39, 42-50 and 52 in view of the combined teachings of Zhu and Krepski'160.

For similar reasons as discussed above and in Applicants' November 21, 2003 Amendment and Response, Applicants respectfully submit:

(1) that one of ordinary skill in the art, given the teaching of Erdtmann directed to ink jet inks, would not have sought out the teaching of Krepski'160, which is not directed to inks or ink jet inks;

(2) that there is no disclosure or suggestion in the teaching of Erdtmann that would have lead one skilled in the art to the teaching of Krepski'160 and the specific silyl-terminated sulfopoly(ester-urethane) polymeric particles disclosed therein;

(3) that the teaching of Erdtmann discloses the incorporation of specific water-dispersible polymers to provide improved abrasion resistance, as well as, other properties to a printed image, so one of ordinary skill in the art seeking to improve the abrasion resistance, of

the ink jet inks of Erdtmann would rely on the disclosure of Erdtmann, which addresses these concerns with specific water-dispersible polymers, and not seek out the teaching of Krepski'160 as suggested; and

(4) that the only motivation for such a modification of the teaching of Erdtmann has been deemed from a review of Applicants' invention, not from what is being taught or suggested in the art.

For at least the reasons given above, Applicants respectfully submit that a *prima facie* case of obviousness has not been made, and that the combination of the teaching of Erdtmann with the teaching of Krepski'160 fails to make obvious Applicants' claimed invention as embodied in independent claims 1, 24, 36 and 42. Since claims 2, 4-9, 15-16, 23, 25, 27-30, 32-35, 37, 40, 43-49 and 51-52 depend from independent claims 1, 24, 36 and 42, and recite additional claim features, Applicants respectfully submit that the combination of the teaching of Erdtmann with the teaching of Krepski'160 also fails to make obvious claims 2, 4-9, 15-16, 23, 25, 27-30, 32-35, 37, 40, 43-49 and 51-52. Accordingly, Applicants respectfully request withdrawal of this rejection.

## II. Conclusion:

For at least the reasons given above, Applicants submit that claims 1-42 and 44-52 define patentable subject matter. Accordingly, Applicants respectfully request allowance of these claims.

Should Examiner Shosho believe that further action is necessary to place the application in better condition for allowance, Examiner Shosho is respectfully requested to contact Applicants' representative at the telephone number listed below.

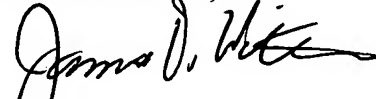


Amendment And Response  
Serial No. 10/000,284

No additional fees are believed due; however, the Commissioner is hereby authorized to charge any deficiency, or credit any overpayment, to Deposit Account No. 503025.

Respectfully submitted,

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3M Matter No.: 56530US002